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Vitamin D regulation of the renin-angiotensin system.

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Abstract

The renin-angiotensin system (RAS) plays a central role in the regulation of blood pressure, electrolyte, and volume homeostasis. Epidemiological and clinical studies have long suggested an association of inadequate sunlight exposure or low serum 1,25-dihydroxyvitamin D(3) [1,25(OH)(2)D(3)] levels with high blood pressure and/or high plasma renin activity, but the mechanism is not understood. Our recent discovery that 1,25(OH)(2)D(3) functions as a potent negative endocrine regulator of renin gene expression provides some insights into the mechanism. The concept of vitamin D regulation of blood pressure through the RAS opens a new avenue to our understanding of the physiological functions of the vitamin D endocrine system, and provides a basis for exploring the potential use of vitamin D analogues in prevention and treatment of hypertension.

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